

REMARKS

Applicants respectfully request further examination and reconsideration in view of the above amendments. Claims 1-19 remain pending in the case. Claims 1-3, 5, 6, 8-10 and 13 are rejected. Claims 4, 7, 11 and 12 are objected to. Claims 14-19 are allowed. Claims 1, 2, 4-6, 9-12, 14 and 16-19 are amended herein. No new matter has been added.

ALLOWABLE SUBJECT MATTER

Applicants wish to thank the Examiner for the indication that Claims 4, 7, 11 and 12 would be allowable if rewritten in independent form including the limitations of their base Claims and any intervening Claims. Applicants also wish to thank the Examiner for the indication that Claims 14-19 are allowed. Claims 14 and 16-19 have been amended herein based on stylistic grounds. Applicants respectfully assert that Claims 14-19 are still in condition for allowance.

35 U.S.C. §103(a)

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 5,900,953 by Bottou et al., hereinafter referred to as the "Bottou" reference, in view of United States Patent 6,373,981 by de Queiroz et al., hereinafter referred to as the "de Queiroz '981" reference. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited

in Claims 1-3 are not unpatentable over the Bottou in view of de Queiroz '981 in view of the following rationale.

Applicants respectfully direct the Examiner to independent Claim 1 that recites that an embodiment of the present invention is directed to (emphasis added):

A method of decomposing an image comprising:
decomposing the image into a plurality of stripes spanning said image;
determining a layer base color, a layer size and a layer offset of at least one stripe of the plurality of stripes;
separating the stripe into a foreground layer, a background layer and a mask layer based on the layer base color and the layer offset; and
interpolating irrelevant pixel values in the foreground layer and background layer for coder efficiency.

Claims 2 and 3 that depend from independent Claim 1 provide further recitations of the features of the present invention.

Bottou and the claimed invention are very different. Applicants understand Bottou to teach a method and apparatus for extracting a foreground image and a background image from a color document image. Essentially, Bottou teaches extracting foreground and background images by dividing the color document into a plurality of multiscaled grids (Abstract; col. 1, lines 49-51). In particular, Bottou teaches that each grid includes a plurality of blocks and the resolution of the plurality of blocks increases for each successive grid (Abstract; col. 1, lines 51-53).

Bottou does not anticipate the claimed embodiments of the invention because Bottou does not teach, describe or suggest a method of decomposing an image including decomposing the image into a plurality of stripes spanning said image. As described in the claimed embodiment of the present invention, a method is provided for “decomposing the image into a plurality of stripes spanning said image” (emphasis added). As described in the current specification, stripes of a striped document are decomposed and analyzed (page 3, line 29 through page 4, line 1). Striped document 220 of Figure 2 shows compound document 210 striped into a plurality of stripes spanning striped document 220.

In contrast, Bottou teaches extracting foreground and background images by dividing the color document into rectangular blocks of pixels of a single size. Specifically, the blocks should be small enough to capture a foreground color change. The size of the smallest characters should therefore be the maximum size of the blocks (col. 4, lines 12-15). Figure 4 illustrates an image divided into a grid of rectangular blocks. Figures 5 and 6 illustrate grids of blocks of successively smaller sizes. In particular, the block size of each successive grid is a fraction of the size of blocks of the previous grid (col. 4, lines 25-34). Therefore, the rectangular blocks do not span the image.

Applicants understand Bottou to teach a clustering process for extracting background and foreground colors from an image. Essential to this clustering process is dividing the image into a plurality of multiscaled grids. Figures 7 and 8 describe embodiments of Bottou in which background and foreground colors are extracted from an image using multiscaled grids. These embodiments compare the results of the analysis of a larger grid to the analysis of smaller grids. In particular, the methods of Bottou require a plurality of multiscaled grids. By teaching a method for extracting background and foreground colors from an image using a plurality of multiscaled grids, Bottou teaches away from the claimed invention.

Applicants respectfully submit that Bottou does not teach or suggest “decomposing the image into a plurality of stripes spanning said image” as claimed. On the contrary, a method for extracting background and foreground colors from an image using a plurality of multiscaled grids, in which rectangular blocks of the grids do not span the image.

Moreover, Bottou does not anticipate the claimed embodiments of the invention because Bottou also does not teach, describe or suggest a method of decomposing an image including determining a layer base color, a layer size and a layer offset of at least one stripe of a plurality of stripes. Applicants understand Bottou to teach determining whether a pixel is a

foreground pixel or background pixel based on the color of a pixel. In particular, each individual pixel is analyzed (col. 3, lines 25-34).

As described in the specification, a layer base color, associated offsets and layer size for a stripe are determined (page 5, line 24 through page 7, line 24). In contrast, Bottou teaches determining whether a “pixel is a foreground or background pixel by comparing the distances between the pixel color and the current foreground and background colors In one embodiment, the distances between colors are determined by calculating the square root of the sum of the squares of the differences between the red, green and blue coordinates of the colors” (col. 3, lines 25-32). Bottou does not teach determining a layer offset, as each pixel is processed individually. Furthermore, Bottou does not teach determining a layer size, as each pixel is analyzed individually, and therefore has the size of one pixel.

Applicants respectfully submit that Bottou does not teach or suggest “determining a layer base color, a layer size and a layer offset of a stripe,” (emphasis added) as claimed. Applicants understand Bottou to teach processing pixels individually in determining whether they are foreground or background pixels. By teaching a method for extracting background and foreground colors from an image by analyzing pixels individually, Bottou teaches away from determining a layer base color, a layer size and a layer offset of a stripe, as claimed.

Moreover, the combination of Bottou and de Queiroz '981 fails to teach or suggest the claimed embodiments because de Queiroz '981 does not overcome the shortcomings of Bottou. De Queiroz '981, alone or in combination with Bottou, does not show or suggest a method of decomposing an image including decomposing the image into a plurality of stripes spanning said image and determining a layer base color, a layer size and a layer offset of at least one stripe of the plurality of stripes as claimed. As described above, Bottou teaches a method for extracting background and foreground colors from an image using a plurality of multiscaled grids and for analyzing pixels individually.

De Queiroz '981 and the claimed invention are very different. Applicants understand de Queiroz '981 to teach a technique for compressing a pixel map. In particular, de Queiroz '981 teaches a method for segmenting image data by classifying a block of data using several criteria and subsequently updating the classification considering the context of the data (col. 6, lines 24-28).

With reference to Figure 3 of de Queiroz '981, and the accompanying description, a block of a pixel map (block 18 of pixel map 10 of Figure 2) is acquired at step 210. The block is then classified at step 220. At step 230, the block is segmented according to the classification. Applicants respectfully assert that de Queiroz '981 specifically teaches classifying a block. A stripe can comprise a number of blocks (col. 1, lines 63-66). In

particular, a block comprises N by N pixels, while a stripe can comprises N by M pixels, therefore a block is not a stripe.

In contrast, embodiments of the claimed invention are directed towards a method for decomposing an image including “decomposing the image into a plurality of stripes” (emphasis added). Applicants respectfully assert that a stripe as claimed is not a block as recited in de Queiroz ‘981. Furthermore, by specifically teaching the use of a block, de Queiroz ‘981 teaches away from the classifying a stripe.

Furthermore, the claimed embodiment recited the limitation of “determining a layer base color, a layer size and a layer offset of at least one stripe of the plurality of stripes.” This limitation is described in the specification at step 440 of Figure 4, with the detailed recited in Figures 5 and 6 (page 5, line 16 through page 10, line 13). In contrast, de Queiroz ‘981 is silent as to determining any layer base color, any layer size and any layer offset.

Applicants respectfully assert that nowhere does the combination of Bottou and de Queiroz ‘981 teach, disclose or suggest the present invention as recited in independent Claim 1, and that Claim 1 is thus in condition for allowance. Therefore, Applicants respectfully submit that the combination of Bottou and de Queiroz ‘981 also does not teach or suggest the additional claimed features of the present invention as recited in Claims 2 and 3 that

are dependent on allowable base Claim. Applicants respectfully submit that Claims 2 and 3 overcome the rejection under 35 U.S.C. § 103(a) as these claims are dependent on allowable base claims.

Claims 5, 6, 8-10 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bottou in view of de Queiroz '981, and further in view of and "On data Filling Algorithms for MRC Layers" by de Queiroz, hereinafter referred to as the "Data Filling" reference. Claims 5, 6, 8-10 and 13 are dependent on allowable base Claim 1. Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 5, 6, 8-10 and 13 are not unpatentable over the Bottou in view of de Queiroz '981, further in view of Data Filling, for the following rationale.

As described above, the combination of Bottou and de Queiroz '981 does not teach describe or suggest the embodiments of the present invention recited in Claim 1. Moreover, the combination of Bottou, de Queiroz '981 and Data Filling fails to teach or suggest the claimed embodiments because Data Filling does not overcome the shortcomings of Bottou and de Queiroz '981. Data filling, alone or in combination with Bottou and de Queiroz '981, does not show or suggest a method of decomposing an image including decomposing the image into a plurality of stripes spanning said image and determining a layer base color, a layer size and a layer offset of at least one stripe of the plurality of stripes as claimed.

Applicants respectfully assert that nowhere does the combination of Bottou, de Queiroz '981 and Data Filling teach, disclose or suggest the present invention as recited in independent Claim 1, and that Claim 1 is thus in condition for allowance. Therefore, Applicants respectfully submit that the combination of Bottou, de Queiroz '981 and Data Filling also does not teach or suggest the additional claimed features of the present invention as recited in Claims 5, 6, 8-10 and 13 that are dependent on allowable base Claim. Applicants respectfully submit that Claims 5, 6, 8-10 and 13 overcome the rejection under 35 U.S.C. § 103(a) as these claims are dependent on allowable base claims.

CONCLUSION


In light of the above remarks, Applicants respectfully request reconsideration of the rejected claims. Based on the arguments presented above, Applicants respectfully assert that Claims 1-13 overcome the rejections of record and, therefore, Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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Dated: 6/15, 2004



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